

STRUCTURAL NOTES

STRUCTURAL LOADS

1.	BUILDING CODE	NORTH CAROLINA BUILDING CODE 2018	
2.	STRUCTURAL DESIGN CODES AND STANDARDS:		
	DESIGN LOADS	ASCE 7-10	
	STEEL	AISC 360-10	
	CONCRETE	ACI 318-14	
	MASONRY	TMS402-13/ACI 530-13	
	WOOD	ANSI/APC NDS-15	
3.	COLD FORMED STEEL	ASIS S100-12	
4.	BUILDING LIFE CATEGORY	III	
	DESIGN LOADS:		
	ROOF DEAD		
	INSULATION	1.5 PSF	
	ROOFING	2.0 PSF	
	ROOF DECK	2.2 PSF	
	ROOF FRAMING	SELF WEIGHT	
	MEP	3.0 PSF	
	MISCELLANEOUS	6.3 PSF	
	TOTAL	15.0 PSF	
	FLOOR DEAD:		
	FINISHED FLOOR	1.0 PSF	
	FLOOR SHEATHING	3.0 PSF	
	FLOOR FRAMING	3.0 PSF	
	CEILING	2.5 PSF	
	MEP	3.0 PSF	
	MISCELLANEOUS	2.5 PSF	
	TOTAL	15.0 PSF	
	DESIGN LIVE LOADS:		
	MEZZANINE	40 PSF	
	TIERED SEATING	60 PSF	
	STAIRS	100 PSF	
	SNOW:		
	GROUND SNOW	P _g = 10.0 PSF	
	IMPORTANCE FACTOR	I = 1.1	
	WIND	C = 1.0	
	EXPOSURE FACTOR	C _e = 1.0	
	FLAT ROOF	P _f = 7.7 PSF (11.0 PSF MIN)	
	SNOW DRIFT LOADS	AS INDICATED	
	WIND:		
	ULTIMATE DESIGN WIND SPEED	V _{ult} = 131 MPH	
	NOMINAL DESIGN WIND SPEED	V _{nom} = 102 MPH	
	EXPOSURE CATEGORY	C	
	INTERNAL PRESSURE COEFFICIENT	+/- 0.18	
	TOPOGRAPHIC FACTOR	K _z = 1.0	
	DIRECTIONALITY FACTOR	K _d = 0.85	
	GUST EFFECT FACTOR	G = 0.85	
	COMPONENTS & CLADDING ULTIMATE WIND PRESSURES		
ZONE	10 SF	50 SF	100 SF
WALL			
NEGATIVE ZONE 4	-45.6 PSF	-41.2 PSF	-38.3 PSF
NEGATIVE ZONE 5	-56.2 PSF	-47.5 PSF	-43.7 PSF
POSITIVE ZONES 4 & 5	-42.0 PSF	-37.6 PSF	-35.7 PSF
ROOF			
NEGATIVE ZONE 1	-52.7 PSF	-46.6 PSF	-42.0 PSF
NEGATIVE ZONE 2	-70.5 PSF	-57.1 PSF	-51.3 PSF
NEGATIVE ZONE 3	-70.5 PSF	-57.1 PSF	-51.3 PSF
POSITIVE ALL ZONES	31.3 PSF	21.4 PSF	17.1 PSF
OVERHANG ZONES 1 & 2	-103.2 PSF	-91.6 PSF	-86.6 PSF
OVERHANG ZONE 3	-113.2 PSF	-91.6 PSF	-86.6 PSF
SEISMIC:			
RISK CATEGORY	III		
SEISMIC IMPORTANCE FACTOR	I _e = 1.25		
MAPPED ACCELERATION PARAMETERS	S _s = 0.092 & S ₁ = 0.049		
SITE CLASS	D		
DESIGN ACCELERATION PARAMETERS	S _{ds} = 0.098 & S _{u1} = 0.078		
SEISMIC DESIGN CATEGORY	B		
SEISMIC FORCE RESISTING SYSTEM	STRUCTURAL STEEL SYSTEM NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE		
DESIGN BASE SHEAR	13 KIPS		
SEISMIC RESPONSE COEFFICIENT	C _s = 0.034		
RESPONSE MODIFICATION COEFFICIENT	R = 3		
ANALYSIS PROCEDURE USED	EQUIVALENT LATERAL FORCE		

ABBREVIATIONS

AESS	ARCHITECTURALLY EXPOSED STRUCTURAL STEEL
ARCH	ARCHITECTURAL
BRG	BEARING
CP	CAST IN PLACE
CJ	CONTROL OR CONSTRUCTION JOINT
CL	CENTER LINE
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONT	CONTINUOUS
CVR	COVER
DE	DECK BEARING ELEVATION
DF	DOUG FIR LARCH
DIA	DIAMETER
EA	EACH
EC	EPOXY COATED
EFC	EACH FACE
EL	ELEVATION
EQ	EQUAL
EW	EACH WAY
FD	FLOOR DRAIN
FON	FOUNDATION
FO	FLOOR OPENING
GA	GAUGE
HG	HOT-DIP GALVANIZED
HF	HEN FIR
HCRZ	HORIZONTAL
K	KIP = 1,000 POUNDS
MAX	MAXIMUM
MIN	MINIMUM
MW	MASONRY WALL
NTS	NOT TO SCALE
OC	ON-CENTER
PEMB	PRE-ENGINEERED METAL BUILDING
PL	PLATE
PSF	POUNDS PER SQUARE FOOT
PSL	PARALLEL STRAND LUMBER
PT	PRESSURE TREATED
RO	ROOF OPENING
RS	14 GAUGE GALVANIZED ROOF SUMP PAN WITH SUPPORT FRAME
SM	SIMILAR
SS	STAINLESS STEEL
T&B	TOP AND BOTTOM
TF	TOP OF FOOTING ELEVATION
TP	TOP OF PIER ELEVATION
TS	TOP OF STEEL ELEVATION
TW	TOP OF WALL ELEVATION
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
VIF	VERIFY IN FIELD
W	WITH
WWF	WELDED WIRE FABRIC

GENERAL

- THESE NOTES SUPPLEMENT THE PROJECT SPECIFICATIONS. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- THESE DRAWINGS REPRESENT THE COMPLETED PROJECT WHICH HAS BEEN DESIGNED FOR THE DEAD LOAD WEIGHT OF MATERIALS INDICATED PLUS THE SUPERIMPOSED LIVE LOADS INDICATED IN THE DESIGN DATA. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ALLOWABLE CONSTRUCTION LOADS AND TO PROVIDE PROPER DESIGN AND CONSTRUCTION OF FALSEWORK, FORMWORK, STAGING, BRACING, AND SHORING. CONTRACTOR HAS SOLE RESPONSIBILITY FOR CONSTRUCTION MEANS AND METHODS, SEQUENCES, AND PROCEDURES OF CONSTRUCTION. THE STRUCTURE IS STABLE ONLY IN ITS COMPLETED FORM, WITH COMPLETED CONNECTIONS, AND FIELD INSTALLED MATERIALS HAVING REACHED SPECIFIED DESIGN STRENGTH.
- CROSS CHECK ALL DIMENSIONS AND ELEVATIONS INDICATED. REPORT DISCREPANCIES FOR CLARIFICATION PRIOR TO STARTING CONSTRUCTION OR ORDERING MATERIALS. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT INDICATED ON THE STRUCTURAL DRAWINGS. DO NOT SCALE THESE DRAWINGS.
- DIMENSIONS AND ELEVATIONS OF EXISTING CONSTRUCTION INDICATED ARE APPROXIMATE AND FOR REFERENCE ONLY. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO CONSTRUCTION. REPORT DISCREPANCIES PRIOR TO STARTING CONSTRUCTION OR ORDERING MATERIALS.
- IN THE CASE OF A CONFLICT WITHIN THE CONTRACT DOCUMENTS, INCLUDING DRAWINGS AND SPECIFICATIONS, THE MOST STRINGENT REQUIREMENTS WILL GOVERN.
- REFER TO ARCHITECTURAL, MECHANICAL, PLUMBING, ELECTRICAL, CIVIL, AND FOOD SERVICE DRAWINGS FOR SIZE AND LOCATION OF OPENINGS, SLOPES, CONCRETE HOUSEKEEPING PADS, INSURTS, CURBS, RAMPS, JOINTS, DEPRESSIONS, ETC. NOTIFY STRUCTURAL ENGINEER OF ANY DISCREPANCIES.
- REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR DETAILED INFORMATION REGARDING SPECIAL FINISHES ON STRUCTURAL MEMBERS, FIREPROOFING, WATERPROOFING, ETC.
- REFER TO ARCHITECTURAL DRAWINGS FOR MASONRY AND DRYWALL NON-LOADBEARING PARTITIONS. PROVIDE SLIP CONNECTIONS THAT ALLOW VERTICAL MOVEMENT AT THE HEADS OF SUCH PARTITIONS. CONNECTIONS SHALL SUPPORT THE TOP OF THE WALLS LATERSL FOR THE CODE REQUIRED LATERAL LOAD.
- REPRODUCTION OF THE STRUCTURAL DRAWINGS FOR SUBMISSION AS SHOP DRAWINGS IS PROHIBITED. SUBMITTALS PRODUCED IN THIS MANNER WILL BE REJECTED.
- DEFERRED SUBMITTALS: PORTIONS OF THE DESIGN HAVE BEEN DEFERRED AND WILL BE DESIGNED BY PRODUCT MANUFACTURERS QUALIFIED LICENSED ENGINEERS. THE STRUCTURAL ENGINEER OF RECORD WILL REVIEW SUBMITTALS OF THESE SYSTEMS FOR GENERAL CONFORMANCE WITH THE PROJECT PARAMETERS INDICATED AND IS NOT RESPONSIBLE FOR DEFERRED SUBMITTAL DESIGN. DEFERRED SUBMITTALS INCLUDE:
 - COLD-FORMED METAL FRAMING
 - PRE-FABRICATED STEEL STAIRS
 - GUARDRAILS
 - METAL LADDERS
 - STOREFRONT WINDOW WALL SYSTEMS
 - PRE-FABRICATED AWNINGS AND SUNSHADES
- CONTRACTOR TO PROVIDE A SUBMITTAL FOR ENGINEER REVIEW FOR THE FOLLOWING:
 - CONCRETE REINFORCEMENT
 - STRUCTURAL STEEL
 - STEEL DECK

GENERAL CONDITIONS

- OBTAIN ALL NECESSARY STATE AND LOCAL PERMITS. WORK SHALL COMPLY WITH ALL LOCAL ORDINANCES INCLUDING BUT NOT LIMITED TO WORKING HOURS, NOISE LEVELS, DUST, ETC.
- IMPLEMENTING JOB SITE SAFETY AND CONSTRUCTION PROCEDURES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- THE ENGINEER'S SITE VISITS ARE TO OBSERVE THE CONSTRUCTION. THEY ARE NOT A GUARANTEE OF THE CONTRACTOR'S QUALITY OF WORK, NOR DO THEY INDICATE RESPONSIBILITY FOR COORDINATION, SUPERVISION, OR SAFETY AT THE JOB SITE.
- FIELD VERIFY LOCATIONS OF EXISTING STRUCTURES, PIPING, CONDUITS, DUCTWORK, ETC. AND NOTIFY THE ENGINEER OF INTERFERENCES.

DEMOLITION

- PRIOR TO DEMOLITION, PROVIDE APPROPRIATE SHORING FOR BOTH VERTICAL LOADS AND BRACING AGAINST LATERAL DISPLACEMENT AS REQUIRED TO MAINTAIN STABILITY OF THE STRUCTURE. DESIGN OF TEMPORARY SHORING SYSTEMS IS PART OF THE CONTRACTOR'S MEANS AND METHODS AND IS THE RESPONSIBILITY OF THE CONTRACTOR.
- PROTECT ALL ELEMENTS TO REMAIN BOTH INSIDE AND OUTSIDE OF CONSTRUCTION AREA FROM DAMAGE DURING DEMOLITION AND RECONSTRUCTION INCLUDING, BUT NOT LIMITED TO, BUILDING FACADES, ROOFING, WINDOWS, LIGHT FIXTURES, LOUVERS, ETC.
- DEMOLITION OPERATIONS MUST COMPLY WITH LOCAL ORDINANCES INCLUDING BUT NOT LIMITED TO NOISE LEVELS AND DUST CONTROL. AT ALL TIMES, CONTRACTOR IS REQUIRED TO VERIFY AND COMPLY WITH ALL LOCAL REQUIREMENTS.
- PROVIDE TEMPORARY PROTECTION OF WORK AREAS AND ADJACENT AREAS FROM REMOVAL OF WATERPROOF MEMBRANES AND FLASHINGS.

FOUNDATIONS

- LOCATE ALL UNDERGROUND UTILITIES BEFORE STARTING WORK. CONTACT UTILITY LOCATING SERVICES PRIOR TO EXCAVATION. ANY EXISTING UTILITIES INDICATED ON DRAWINGS ARE BASED ON ORIGINAL CONSTRUCTION DRAWINGS AND SITE SURVEYS. EXACT UTILITY LOCATIONS AND ELEVATIONS OF UTILITIES MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO BEGINNING WORK.
- FOUNDATION DESIGN IS BASED ON THE SOILS INVESTIGATION REPORT NUMBER K255046 BY TERRACON DATED FEBRUARY 27, 2026.
- FOUNDATIONS SHALL BEAR ON SOILS HAVING A MINIMUM ALLOWABLE BEARING PRESSURE OF 2,000 PSF. FOOTINGS SHALL BEAR ON UNDISTURBED SOIL. AT ELEVATIONS SHOWN ON THE DRAWINGS. IF OVER-EXCAVATION IS REQUIRED, ENGINEERED COMPACTED FILL SHALL BE PLACED PER SPECIFICATIONS UP TO BEARING ELEVATION. ALL ENGINEERED COMPACTED FILL SHALL BE PLACED IN THE PRESENCE OF AND AS DIRECTED BY A QUALIFIED GEOTECHNICAL ENGINEERING FIRM. LOCATION AND EXTENT OF AREAS TO BE ENGINEERED COMPACTED FILL SHALL BE PER THE GEOTECHNICAL REPORT AND TESTING OF SOILS SHALL BE ACCORDING TO SPECIFICATIONS PRIOR TO PLACEMENT OF FOOTINGS.
- CONTRACTOR SHALL PROVIDE SLEEVES FOR ALL OPENINGS REQUIRED IN WALLS. NO CORE DRILLING WILL BE ALLOWED WITHOUT PRIOR APPROVAL BY THE STRUCTURAL ENGINEER. COORDINATE LOCATION AND SIZE OF OPENINGS WITH APPLICABLE CONTRACTORS.
- DO NOT REPAIR MISPLACED OR DAMAGED COLUMN ANCHOR BOLTS WITHOUT PRIOR APPROVAL BY THE STRUCTURAL ENGINEER.
- WHERE FOUNDATION WALLS ARE TO HAVE EARTH PLACED ON EACH SIDE, PLACE FILL ON ALTERNATING SIDES OF WALL IN SHALLOW LIFTS.
- COORDINATE ELECTRICAL SERVICE GROUNDING REQUIREMENTS TO FOUNDATION REINFORCING WITH ELECTRICAL. SEE ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.

CONCRETE

- ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) DOCUMENTS REFERENCED IN SPECIFICATIONS.
- MATERIAL PROPERTIES:

	LOCATION	28 DAY FC (PSI)	AIR CONTENT	MAX W/C RATIO
FOUNDATIONS		3,000	NO TEST	0.50
FOUNDATION WALLS		4,000	NO TEST	0.50
ALL CONCRETE EXPOSED TO WEATHER		4,000	6% ± 1%	0.50
INTERIOR SLABS ON GRADE		3,500	NO TEST	0.50
SUPPORTED SLABS		4,000	NO TEST	0.50
- REINFORCING BARS SHALL BE ASTM A615 GRADE 60 UNO TIES AND STRUTS ASTM A615 GRADE 40.
- PROVIDE CRUSHED LIMESTONE LARGE AGGREGATE AND AIR ENTRAINMENT WHERE CONCRETE IS EXPOSED TO WEATHER AND WHERE INDICATED.
- SEE SPECIFICATIONS FOR ALL TESTING REQUIREMENTS. SUBMIT EACH CONCRETE MIX DESIGN FOR REVIEW. SUBMITTAL SHALL CONSIST OF DESIGN MIXES FOR EACH TYPE AND STRENGTH OF CONCRETE AND INCLUDE DATA BY EITHER LABORATORY TRIAL MIX OR FIELD TEST DATA BASED ON 11" X 22" COLUMNS.
- ALL CONCRETE SHALL BE CURED FOR A MINIMUM OF 7 DAYS PRIOR TO REMOVAL OF FORMS. IF FORMS ARE REMOVED BEFORE THE END OF CURING PERIOD, COAT SURFACES WITH LIQUID CURING COMPOUND.
- PROVIDE DOWELS IN WALL FOOTINGS WITH EQUAL SIZE AND SPACING AS VERTICAL WALL STEEL UNO.
- ALL OPENINGS IN SLABS AND WALLS SHALL HAVE REINFORCING ON EACH SIDE EQUAL TO THE AMOUNT OF REINFORCING DISPLACED.
- ALL CONCRETE SLABS ON GRADE SHALL BE REINFORCED WITH #4W. W/14W1.4 WELDED WIRE FABRIC.
- SEE ARCHITECTURAL DRAWINGS FOR SIZE, DEPTH, AND LOCATION OF DEPRESSIONED FLOOR SLABS REQUIRED.
- PROVIDE CLASS "B" TENSION LAP SPLICES FOR ALL BARS UNO.

BAR	LAP LENGTH @ FC=3ksi	LAP LENGTH @ FC=4ksi	HOOK EXTENSION	18" HOOK EXTENSION
#3	22"	19"	4"	4"
#4	25"	25"	8"	4"
#5	30"	31"	10"	4"
#6	43"	37"	12"	6"
#7	63"	54"	14"	7"
#8	73"	62"	16"	7"

- USE NON-SHRINK, NON-METALLIC GROUT UNDER ALL BASE PLATES, BEARING PLATES, AND SETTING PLATES.
- PROVIDE CONCRETE COVER OVER REINFORCING BARS AS FOLLOWS UNO:
 - A. CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH = 3"
 - B. PERMANENTLY EXPOSED TO EARTH OR WEATHER, #5 AND SMALLER = 1 1/2"; #6 AND LARGER = 2"
 - C. NOT EXPOSED TO EARTH OR WEATHER, WALLS AND SLABS = 3/4" BEAMS AND COLLARS = 1 1/2"
- TOP AND BOTTOM HORIZONTAL REINFORCEMENT IN WALLS TO BE LOCATED NO LESS THAN 2" AND NO MORE THAN 3" FROM TOP OR BOTTOM OF THE WALL. CONSTRUCTION JOINT LOCATIONS IN SUPPORTED CONCRETE BEAMS AND SLABS MUST BE APPROVED BY THE STRUCTURAL ENGINEER. CONSTRUCTION JOINTS SHALL BE LOCATED IN THE MIDDLE THIRD OF THE SPAN.
- VOID FORMS: BIODEGRADABLE CORRUGATED PAPER VOID FORMS BY SUPERVO PRODUCTS INC. PROVIDE VOID FORM DESIGNED FOR CONCRETE CONSTRUCTION TO PROVIDE TEMPORARY SUPPORT OF CONCRETE DURING PLACEMENT UNTIL CONCRETE REACHES DESIGN STRENGTH. VOID FORM TO BE DESIGNED TO ABSORB MOISTURE AND LOSE STRENGTH ISOLATING CONSTRUCTION JOINT LOCATIONS IN SUPPORTED CONCRETE BEAMS AND SLABS MUST BE APPROVED BY THE STRUCTURAL ENGINEER. CONSTRUCTION JOINTS SHALL BE LOCATED IN THE MIDDLE THIRD OF THE SPAN.

CONCRETE TESTING

- TESTING AGENCY OWNER WILL ENGAGE A QUALIFIED INDEPENDENT TESTING AND INSPECTING AGENCY TO SAMPLE MATERIALS, PERFORM TESTS, AND SUBMIT TEST REPORTS DURING CONCRETE PLACEMENT, SAMPLING AND TESTING FOR QUALITY CONTROL. MAY INCLUDE THOSE SPECIFIED IN THIS ARTICLE.
- TESTING SERVICES: TESTING OF COMPOSITE SAMPLES OF FRESH CONCRETE OBTAINED ACCORDING TO ASTM C172 SHALL BE TO DETERMINE ACCORDING TO THE FOLLOWING REQUIREMENTS:
 - A. TESTING FREQUENCY: OBTAIN AT LEAST ONE COMPOSITE SAMPLE FOR EACH 100 CUBIC YARD OR FRACTION THEREOF OF EACH CONCRETE MIX PLACED EACH DAY. WHEN FREQUENCY OF TESTING WILL PROVIDE FEWER THAN FIVE COMPRESSIVE STRENGTH TESTS FOR EACH CONCRETE MIX, TESTING SHALL BE CONDUCTED FROM AT LEAST FIVE RANDOMLY SELECTED BATCHES OR FROM EACH BATCH IF FEWER THAN FIVE ARE USED.
 - B. SLUMP: ASTM C143, ONE TEST AT POINT OF PLACEMENT FOR EACH COMPOSITE SAMPLE, BUT NOT LESS THAN ONE TEST FOR EACH DAY'S POUR OF EACH CONCRETE MIX. PERFORM ADDITIONAL TESTS WHEN CONCRETE CONSISTENCY APPEARS TO CHANGE.
 - C. AIR CONTENT: ASTM C231, PRESSURE METHOD, FOR NORMAL-WEIGHT CONCRETE, ONE TEST FOR EACH COMPOSITE SAMPLE, BUT NOT LESS THAN ONE TEST FOR EACH DAY'S POUR OF EACH CONCRETE MIX.
 - D. CONCRETE TEMPERATURE: ASTM C1064, ONE TEST HOUR IN W/14W1.4 WELDED WIRE FABRIC, AND ONE TEST FOR EACH COMPOSITE SAMPLE.
 - E. COMPRESSIVE STRENGTH: ASTM C39, TEST TWO LABORATORY-CURED SPECIMENS AT 7 DAYS AND THREE AT 28 DAYS. A COMPRESSIVE STRENGTH TEST SHALL BE THE AVERAGE COMPRESSIVE STRENGTH FROM SPECIMENS OBTAINED FROM THE SAME COMPOSITE SAMPLE AND TESTED AT THE AGE INDICATED. CAST AND FIELD CURE ADDITIONAL SETS OF STANDARD CYLINDER SPECIMENS IN SETS OF THREE FOR EACH COMPOSITE SAMPLE WHEN REQUIRED TO VERIFY STRENGTH OF IN PLACE CONCRETE FOR REMOVAL OF SHORING. SPECIMENS SHALL BE STORED ADJACENT TO AND CURED SIMILAR TO CONCRETE TO BE VERIFIED.
- WHEN STRENGTH OF FIELD-CURED CYLINDERS (IF REQUIRED) IS LESS THAN 85 PERCENT OF COMPANION LABORATORY-CURED CYLINDERS, CONTRACTOR SHALL EVALUATE OPERATIONS AND PROVIDE CORRECTIVE PROCEDURES FOR PROTECTING AND CURING IN PLACE CONCRETE.
- STRENGTH OF EACH CONCRETE MIX WILL BE SATISFACTORY IF EVERY AVERAGE OF AT THREE CONSECUTIVE COMPRESSIVE STRENGTH TESTS EQUALS OR EXCEEDS SPECIFIED COMPRESSIVE STRENGTH AND NO COMPRESSIVE STRENGTH TEST VALUE FALLS BELOW SPECIFIED COMPRESSIVE STRENGTH BY MORE THAN 500 PSI.
- TEST RESULTS SHALL BE REPORTED IN WRITING TO ENGINEER, CONCRETE MANUFACTURER, AND CONTRACTOR WITHIN 48 HOURS OF TESTING. REPORTS OF COMPRESSIVE STRENGTH TESTS SHALL CONTAIN PROJECT IDENTIFICATION NAME AND NUMBER, DATE OF CONCRETE PLACEMENT, NAME OF CONCRETE TESTING AND INSPECTING AGENCY, LOCATION OF CONCRETE BATCH IN WORK, DESIGN COMPRESSIVE STRENGTH AT 28 DAYS, CONCRETE MIX PROPORTIONS, AND MATERIALS COMPRESSIVE BREAKING STRENGTH, AND TYPE OF BREAK FOR BOTH 7-DAY AND 28-DAY TESTS.
- NONDESTRUCTIVE TESTING: IMPACT HAMMER, SONOSCOPE, OR OTHER NONDESTRUCTIVE DEVICE MAY BE PERMITTED BY ENGINEER BUT WILL NOT BE USED AS SOLE BASIS FOR APPROVAL OR REJECTION OF CONCRETE.
- ADDITIONAL TESTS: TESTING AND INSPECTING AGENCY SHALL MAKE ADDITIONAL TESTS OF CONCRETE WHEN TEST RESULTS INDICATE THAT SLUMP, AIR ENTRAINMENT, COMPRESSIVE STRENGTHS, OR OTHER REQUIREMENTS HAVE NOT BEEN MET, AS DIRECTED BY ENGINEER. TESTING AND INSPECTING AGENCY MAY CONDUCT TESTS TO DETERMINE ADEQUACY OF CONCRETE BY CORDED CYLINDERS COMPLYING WITH ASTM C402 OR BY OTHER METHODS AS DIRECTED BY ARCHITECT.

POST-INSTALLED ANCHORS

- POST INSTALLED ADHESIVE ANCHORS:
 - A. INSTALL PER MANUFACTURERS PRINTED INSTALLATION INSTRUCTIONS (MPI).
 - B. DO NOT INSTALL ANCHORS IN WET OR SATURATED CONCRETE.
 - C. DO NOT INSTALL ANCHORS IN CONCRETE LESS THAN 21 DAYS OLD OR UNTIL CONCRETE HAS REACHED ITS DESIGN STRENGTH, WHICHEVER COMES FIRST.
 - D. VERIFY ADHESIVE EXPIRATION DATE PRIOR TO INSTALLATION.
 - E. DO NOT CORE DRILL HOLES FOR ADHESIVE ANCHORS.
 - F. CLEAN HOLES PER MPI.
 - G. CURE ADHESIVE PER MPI PRIOR TO LOADING ANCHORS.
 - H. ADHESIVE FOR REBAR AND ANCHORS SHALL HAVE BEEN TESTED IN ACCORDANCE WITH AC308.4 AND ICC-ES AC 308 FOR CRACKED CONCRETE AND SEISMIC APPLICATIONS.
- ANCHOR DESIGN IS BASED ON ADHESIVE BOND STRENGTH PER AC 308.4. TEMPERATURE CATEGORY B WITH INSTALLATIONS INTO DRY HOLES DRILLED USING A CARBIDE DRILL BIT INTO CRACKED CONCRETE THAT HAS CURED FOR AT LEAST 31 DAYS.
- POST INSTALLED MECHANICAL ANCHORS:
 - A. INSTALL PER MANUFACTURERS PRINTED INSTALLATION INSTRUCTIONS (MPI).
 - B. DO NOT PERFORM DRILL HOLES FOR MECHANICAL ANCHORS.
 - C. CLEAN HOLES PER MANUFACTURERS REQUIREMENTS.
 - D. INSTALL IN STRICT COMPLIANCE WITH MANUFACTURERS REQUIREMENTS.

MASONRY

MATERIAL PROPERTIES:

MASONRY 28 DAY COMPRESSIVE STRENGTH	f _m = 2,000 PSI
CONCRETE MASONRY UNITS	2,000 PSI ASTM C90
MORTAR (TYPE S)	2,000 PSI ASTM C270
GROUT	ASTM C476
GROUT 28 DAY COMPRESSIVE STRENGTH	2,000 PSI

- REFER TO ARCHITECTURAL DRAWINGS FOR MASONRY CONTROL JOINT LOCATIONS.
- ALL MASONRY WALLS SHALL BE REINFORCED WITH LADDER TYPE HORIZONTAL JOINT REINFORCEMENT PLACED EVERY OTHER COURSE FOR RUNNING BOND AND EVERY COURSE FOR STACK BOND. PROVIDE GALVANIZED WIRE REINFORCEMENT WITH #9 GAUGE SIDE RODS AND #9 GAUGE CROSS RODS SPACED 18" OC. FOR TWO WYTHE WALLS, PROVIDE HOOK AND PLACED TIES.
- PROVIDE LINTELS PER THE FOLLOWING TABLE UNO ON THE DRAWINGS:

OPENING SIZE	STEEL LINTEL PER 4" OF WALL	8" DEEP MASONRY LINTEL
0 TO 4'-0"	1L4x3-1/2x1/4	(2) #5 BOND BEAM
- PROVIDE A MINIMUM OF 8" BEARING AT EACH END OF ALL LINTELS UNO.
- VERTICAL REINFORCEMENT SHALL BE LAPPED AND LIFT IN POSITION WITH BAR POSITIONERS.

BAR	LAP LENGTH
#3	16"
#4	24"
#5	35"
#6	64"
#7	87"

- NO CHASES, RISERS, CONDUITS OR TOOTHING OF MASONRY SHALL OCCUR IN MASONRY WALLS WITHIN 18" OF CENTERLINE OF BEAM BEARING.
- GROUT SOLID ALL REINFORCED CELLS, CELLS BELOW GRADE, AND ALL CELLS BELOW FINISH FLOOR.
- VERTICAL CELLS TO BE GROUTED SHALL HAVE VERTICAL ALIGNMENT SUFFICIENT TO MAINTAIN A TOTAL MINIMUM CLEAR AREA OF 2"x2" ALL OVERHANGING MORTAR, OBSTRUCTIONS AND DEBRIS SHALL BE CLEANED FROM THE INSIDE OF CELLS PRIOR TO GROUTING.
- REINFORCEMENT SHALL BE PLACED PRIOR TO GROUTING.
- MAXIMUM HEIGHT OF GROUT POURS SHALL NOT EXCEED 5'-0". BETWEEN GROUT POURS, A HORIZONTAL CONSTRUCTION JOINT SHALL BE FORMED BY STOPPING GROUT 1'-0" BELOW MORTAR JOINT EXCEPT AT THE TOP OF THE WALL.
- ALL CMU WALLS SHALL BE REINFORCED VERTICALLY AS SPECIFIED ON DRAWINGS WITH THE SPECIFIED BAR FOR THAT WALL AT THE ENDS OF WALLS AT CORNERS AND EACH SIDE OF CONTROL OR EXPANSION JOINTS, AND AT EACH SIDE OF OPENING, ALL IN FULLY GROUTED CELLS. IF REINFORCING IS NOT SHOWN ON DRAWINGS, REINFORCE W/ #5 BARS AT 4'-0" ON CENTER.
- PROVIDE DOWELS INTO FLOOR OR FOUNDATION AT BOTTOM OF WALL TO MATCH SIZE AND SPACING OF VERTICAL WALL REINFORCING.
- STABILIZE TOP OF ALL VERTICALLY REINFORCED WALLS PER DRAWINGS.
- ALL MASONRY WALL INTERSECTIONS SHALL BE CONSTRUCTED AS FOLLOWS UNO ON PLANS OR DETAILS:
 - A. ALL INTERSECTING 90° CORNERS SHALL BE BONDED AND SHALL BE REINFORCED WITH PREFABRICATED L-SHAPED HORIZONTAL JOINT REINFORCEMENT AT 18" OC. WHERE WALLS INTERSECT AT AN ANGLE OTHER THAN 90°, CORNERS SHALL BE REINFORCED WITH 1/4"x2"x24" STEEL STRIPS WITH 2" HOOK ON EACH END OF TOTAL LENGTH AT 2'-0" OC. GROUT CELLS SOLID FULL HEIGHT AT EACH END OF STRIPS.
 - B. ALL TEE INTERSECTIONS SHALL BE REINFORCED W/ PREFABRICATED TEE-SHAPED HORIZONTAL JOINT REINFORCEMENT AT 18" OC OR WITH 1/4"x2"x24" STEEL STRIPS WITH 2" HOOK ON EACH END OF TOTAL LENGTH AT 2'-0" OC. WHERE WALLS INTERSECT AT AN ANGLE OTHER THAN 90°, INTERSECTIONS SHALL BE REINFORCED WITH 1/4"x2"x24" STEEL STRIPS WITH 2" HOOK ON EACH END OF TOTAL LENGTH AT 2'-0" OC. GROUT CELLS SOLID FULL HEIGHT AT EACH END OF STRIPS.
- PROVIDE TEMPORARY BRACING OF MASONRY WALLS UNTIL ALL FINAL ROOF AND FLOOR FRAMING IS COMPLETE INCLUDING ALL FINAL CONNECTIONS TO METAL DECK AND CONCRETE FLOOR SLABS AND MASONRY HAS REACHED DESIGN STRENGTH.

STRUCTURAL STEEL

MATERIAL PROPERTIES:

MATERIALS	ASTM	MIN YIELD STRESS (KSI)	TENSILE STRESS (KSI)
STRUCTURAL STEEL (WIDE FLANGE)	A992	50	65
STRUCTURAL TUBES (HSS)	A500 Gr C	50	62
STRUCTURAL PIPE	A53 Gr B	35	60
STRUCTURAL STEEL (ALL OTHERS)	A36	36	58
WELDING ELECTRODES	AWS D11.1-88	-	-
3/4" DIAMETER BOLTS	F1552	-	-
ANCHOR RODS	F1554 Gr 36	36	58
NUTS	A563	-	-
WASHERS	F436 CIRCULAR	-	-

- SAMPLE SHEAR CONNECTIONS NOT DETAIL IN THE STRUCTURAL DRAWINGS MAY BE SELECTED FROM THE SIMPLE SHEAR CONNECTION TABLES PART 10 OF THE AISC MANUAL OF STEEL CONSTRUCTION. IF REACTION IS NOT INDICATED, CONNECTION SHALL DEVELOP 80% OF THE MAXIMUM TOTAL UNIFORM LOAD INDICATED IN PART 3 OF THE AISC MANUAL OF STEEL CONSTRUCTION. CONNECTIONS SHALL BE SHOP WELDED AND FIELD BOLTED UNO. TYPICAL SHEAR CONNECTIONS SHALL BE BEARING TYPE USING SLUG-TIGHTENED BOLTS AND BRACING CONNECTIONS SHALL BE SLIP CRITICAL. PROVIDE MINIMUM (2) HIGH STRENGTH BOLTS FOR EACH CONNECTION.
- FIELD ALTERATIONS OF STRUCTURAL MEMBERS ARE NOT PERMITTED WITHOUT APPROVAL OF THE STRUCTURAL ENGINEER.
- STEEL COLUMNS SHALL EXTEND TO WITHIN 1" OF TOP OF BEAMS UNO.
- ERECTION CONTRACTOR SHALL PROVIDE ADEQUATE TEMPORARY BRACING TO RESIST WIND LOADS UNTIL ALL FINAL CONNECTIONS OF THE STEEL FRAME, METAL DECK, AND SHEAR WALLS ARE COMPLETED.
- FIELD BREAK-AWAY FIRE-RELEASE CONNECTORS ARE MANUFACTURED BY FERRO CORPORATION, 15305-11 AVENUE, EDMONTON, ALBERTA, CANADA T6M 3A4. (780)666-3399, WWW.FERRO-CORP.COM.

STEEL DECK

- SEE PLANS FOR METAL FLOOR AND ROOF DECK. PROVIDE CONTINUOUS ANGLE SUPPORTS OR BENT PLATES AROUND PERIMETER AND FLOOR OPENINGS WHERE CONCRETE BULKHEADS ARE REQUIRED. SEE DETAILS FOR TYPICAL SIZE AND LOCATIONS.
- THE METAL DECK CONTRACTOR SHALL DETAIL, FURNISH, AND INSTALL CONNECTIONS FROM METAL DECK TO STEEL FRAME, IN ACCORDANCE WITH THE STEEL DECK INSTITUTE DESIGN MANUAL. PROVIDE THE FOLLOWING MINIMUM CONNECTIONS, UNLESS DIAPHRAGM SHEARS ARE NOTED ON THE DRAWINGS:
 - A. WELD OPTION: 5/8" DIAMETER PUDDLE WELDS AT 12" OC TO EACH SUPPORT AND AT 6" OC AROUND OPENINGS.
 - B. POWDER-ACTIVATED FASTENER OPTION: WHERE STEEL BASE MATERIAL THICKNESS IS GREATER THAN 1/4" USE HLT-X-EN-19 FASTENERS AT 12" OC TO EACH SUPPORT AND AT 6" OC AROUND OPENINGS.
 - C. POWDER-ACTIVATED FASTENER OPTION: WHERE STEEL BASE MATERIAL THICKNESS IS LESS THAN 1/4" USE HLT-X-HEN-24 FASTENERS AT 12" OC TO EACH SUPPORT AND AT 6" OC AROUND OPENINGS.
 - D. #12 SCREW AT MID-SPAN OF ALL SIDE LAPS OR 36" OC MAX.
- FIELD CUT ALL METAL ROOF DECK OPENINGS SHOWN ON THE ARCHITECTURAL, STRUCTURAL, AND MECHANICAL DRAWINGS AND REINFORCE ALL OPENINGS GREATER THAN 12" DIAMETER WITH 1/3x3/4" FRAMING.
- DO NOT ATTACH OR HANG EQUIPMENT, MATERIALS, OR ANY LOADS GREATER THAN 50 POUNDS TO METAL ROOF DECK.
- STEEL ROOF OR FLOOR DECK GAGE TO CORRESPOND TO THE FOLLOWING MINIMUM THICKNESSES: 22 GA=0.028", 20 GA=0.034", 18 GA=0.047", 16 GA=0.077".
- MINIMUM STEEL DECK YIELD STRENGTH SHALL BE 50 KSI.

COLD-FORMED STEEL FRAMING

- ALL MATERIALS AND WORKMANSHIP SHALL BE IN COMPLIANCE WITH AMERICAN IRON AND STEEL INSTITUTE (AISI) DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS AND AMERICAN WELDING SOCIETY (AWS) STRUCTURAL WELDING CODE - SHEET STEEL. THIS SPECIFICATION APPLIES TO ALL COLD-FORMED STRUCTURAL LOAD BEARING MEMBERS.
- ENGAGE QUALIFIED PROFESSIONAL ENGINEER TO DESIGN COLD-FORMED STEEL FRAMING. FRAMING INDICATED REPRESENTS THE MINIMUM DESIGN GAGE AND SPACING REQUIRED. IF DELEGATED DESIGN REQUIREMENTS ARE DIFFERENT, PROVIDE THE MORE STRINGENT REQUIREMENTS.
- FOR 16 GAUGE AND HEAVIER UNITS, USE F75-60 KSI PER ASTM A653 UNO FOR 16 GAUGE AND LIGHTER UNITS, USE F73-35 KSI UNO. PROVIDE GALVANIZED FINISH TO METAL FRAMING COMPONENTS COMPLYING WITH ASTM A 252 FOR MINIMUM G60 COATING.
- AXIALLY LOADED STUDS SHALL HAVE FULL BEARING AGAINST INSIDE TRACK WEB. SPLICES IN STUDS AND JOISTS ARE NOT PERMITTED.
- FASTEN ALL COMPONENTS WITH EITHER SELF-TAPPING SCREWS OR WELDING OF SUFFICIENT SIZE TO ENSURE STRENGTH OF CONNECTION AND AS SPECIFICALLY INDICATED ON THE DRAWINGS. ALL WELDS SHALL BE TOUCHED UP WITH ZINC ENRICHED PRIMER.
- ALL BEARING WALL STUDS SHALL BE ALIGNED AND SECURELY ATTACHED TO THE FLANGE OR WEB OF BOTH UPPER AND LOWER TRACKS. ALL BRITING STUDS SHALL BE SECURELY ANCHORED TO A COMMON STRUCTURAL ELEMENT OR SHALL BE BUTT WELDED OR SPliced TOGETHER.
- JACK STUDS OR CRIPPLES SHALL BE INSTALLED BELOW ALL OPENINGS FOR HEADER SUPPORT AND SHALL BE FIRMLY ATTACHED TO SUPPORTING MEMBERS.
- PROVIDE CONTINUOUS U-SHAPED STUD BRIDGING IN ALL LOAD BEARING WALLS AT A SPACING NOT EXCEEDING 48" ON CENTER. METAL STUD CHANNELS SHALL BE INSTALLED IN A MANNER TO PREVENT STUD ROTATION.
- JOISTS SHALL BE LOCATED DIRECTLY OVER BEARING STUDS. PROVIDE WEB STIFFENERS AT THE JOIST REACTION POINTS WHERE INDICATED ON PLANS OR AS REQUIRED BY JOIST MANUFACTURER.
- PROVIDE JOIST BRIDGING AT MID-SPAN UNO ON PLANS. PROVIDE END BLOCKING WHERE JOISTS ARE NOT OTHERWISE RESTRAINED.

SPECIAL INSPECTIONS

- BUILDING PERMIT APPLICANT SHALL SUBMIT NAME, ADDRESS, AND CONTACT INFORMATION FOR EACH PROPOSED SPECIAL INSPECTOR INDICATED AT THE TIME OF PERMIT APPLICATION. SPECIAL INSPECTIONS ARE TO BE ARRANGED FOR BY THE GENERAL CONTRACTOR OR CONSTRUCTION MANAGER BUT SHALL HAVE A CONTRACT DIRECTLY WITH THE OWNER. SPECIAL INSPECTIONS ARE REQUIRED AS LISTED BELOW.
- NOTE THAT SPECIAL INSPECTION IS NOT REQUIRED FOR THE FABRICATOR'S SHOP IF CERTIFICATE OF COMPLIANCE IS SUBMITTED BY THE FABRICATOR'S INSPECTION AGENCY PER 1704.2.5.1.

SPECIAL INSPECTIONS SCHEDULE				
ITEM	CONTINUOUS	PERIODIC	ONCE	REFERENCE
FABRICATOR'S SHOP				
1. STEEL FABRICATOR'S SHOP			X	SEC. 1704.2.5
STEEL CONSTRUCTION				
1. HIGH STRENGTH BOLTING		X		SEC. 2204.2 & AISC 360
2. STEEL MATERIAL VERIFICATION & DETAILS			X	AISC 360
3. WELDING			X	SEC. 2204.1 & AISC 360
4. STEEL DECK WELD				SEC. 1705.2.2
CONCRETE CONSTRUCTION				
1. REBAR		X		TABLE 1705.3 - #1 & 2
2. WELDING REINFORCING STEEL		X		TABLE 1705.3 - 1
3. BOLTS		X		TABLE 1705.3 - #3
4. POST-INSTALLED ANCHORS				TABLE 1705.3 - #4
A. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY ORIENTED ORIENTATIONS TO RESIST TENSILE LOADS	X			TABLE 1705.3 - #4B
B. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN A.4.				TABLE 1705.3 - #4B
5. DESIGN MIX & MATERIALS				TABLE 1705.3 - #5
6. STRENGTH TEST, SLUMP, AIR CONTENT, TEMPERATURE				TABLE 1705.3 - #6
7. PLACEMENT				TABLE 1705.3 - #7
MASS CONCRETE CONSTRUCTION				